Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

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1. (Currently Amended) A method of setting up image-on-~~paper~~ recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on ~~a sheet~~ an image recording medium sheet;

measuring at least one test pattern ~~parameters~~parameter;

using the at least one measured test pattern ~~parameters~~ parameter to determine at least ~~one~~ two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors ~~one error~~ to provide a single step error correction of~~adjust~~ at least ~~one~~ two operational parameters of the image forming device.

2. (Original) The method of claim 1, wherein:

printing the test pattern includes printing the test pattern on both a first side of the image recording medium and on a second side of the image recording medium;

measuring the test pattern parameters comprises measuring the test pattern parameters on both the first side and the second side of the image recording medium; and

adjusting at least one operational parameter includes adjusting at least one of a pixel clock frequency, a photoreceptor speed and at least one image-on-paper actuator based on the determined errors.

3. (Original) The method of claim 1, wherein the test pattern comprises a plurality of crosshair targets.

4. (Original) The method of claim 1, wherein a sheet position is registered at an outboard edge and at a leading edge of the sheet for an obverse side of the sheet.

5. (Currently Amended) A method of setting up image-on- recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameter to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors to adjust at least one operational parameter of the image forming device;

~~The method of claim 1~~, wherein the at least one measured test pattern parameter includes at least one of a distance from a center of a leading edge crosshair located near an inboard leading edge of the image recording medium to a center of a trailing edge crosshair located near an outboard edge of the image recording medium, a distance from the center of a leading edge crosshair located near an outboard leading edge of the sheet to the outboard edge of the sheet, a distance between the center of a leading edge inboard crosshair to the center of a leading edge outboard crosshair, a distance between the center of a leading edge outboard crosshair to the center of a trailing edge outboard crosshair, and a measured distance between a leading edge of the sheet to the center of a leading edge outboard crosshair, and a distance between a trailing edge of the sheet to the center of a trailing edge outboard crosshair.

6. (Currently Amended) A method of setting up image-on- recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameter to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors to adjust at least one operational parameter of the image forming device;

~~The method of claim 1,~~ wherein determining at least one registration error in paper skew comprises measuring the test pattern parameters of d_1, e_1, f_1, d_2, e_2 and f_2 and performing at least one geometrical transformation, including

$$\theta = (\tan^{-1}[(f_1 - e_1) / d_1] + \tan^{-1}[(f_2 - e_2) / d_2]) / 2$$

where θ is the amount of rotation of the sheet about the outboard registration edge of the sheet, d_1 is the distance between the two leading edge (LE) crosshair centers on the first side of the sheet, e_1 is the distance from the outboard (OB) edge of the sheet to the center of the leading edge (LE) outboard (OB) crosshair on the first side of the sheet, f_1 is the distance from the outboard (OB) edge of the sheet to the center of the trailing edge (TE) outboard (OB) crosshair on the first side of the sheet, d_2 is the distance between the two leading edge (LE) crosshair centers on the second side of the sheet, e_2 is the distance from the outboard (OB) edge of the sheet to the center of the leading edge (LE) outboard (OB) crosshair on the second side of the sheet, and f_2 is the distance from the outboard (OB) edge of the sheet to the center of the trailing edge (TE) outboard (OB) crosshair on the second side of the sheet.

7. (Currently Amended) A method of setting up image-on-recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameter to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors to adjust at least one operational parameter of the image forming device;

~~The method of claim 1,~~ wherein the image forming device comprises a photoreceptor belt; and

wherein determining at least one registration error in raster output scanner skew comprises at least one geometrical transformation, including

$$\phi = (\phi_1 + \phi_2)/2$$

where:

ϕ is the amount of rotation of the raster output scanner about an axis perpendicular to the photoreceptor belt surface;

ϕ_1 is the amount of rotation of the raster output scanner about an axis perpendicular to the photoreceptor belt surface for first side of the sheet; and

ϕ_2 is the amount of rotation of the raster output scanner about an axis perpendicular to the photoreceptor belt surface for second side of the sheet.

8. (Currently Amended) A method of setting up image-on-recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameters to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors to adjust at least one operational parameter of the image forming device;

~~The method of claim 1,~~ wherein determining at least one registration error comprises performing at least one geometrical transformation, including

$$L_{ME} = (L_{ME1} + L_{ME2}) / 2$$

where:

L_{ME} is lateral magnification error of the sheet;

L_{ME1} is lateral magnification error for first side of the sheet; and

L_{ME2} is lateral magnification error for second side of the sheet.

9. (Currently Amended) A method of setting up image-on-recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameter to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors to adjust at least one operational parameter of the image forming device;

~~The method of claim 1,~~ wherein determining at least one registration error involves at least one geometrical transformation, including

$$P_{ME} = (P_{ME1} + P_{ME2}) / 2$$

where:

P_{ME} is process magnification error;

P_{ME1} is process magnification error for first side of the sheet; and

P_{ME2} is process magnification error for second side of the sheet.

10. (Currently Amended) A method of setting up image-on-recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameter to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors to adjust at least one operational parameter of the image forming device;

~~The method of claim 1,~~ wherein the image forming device has a photoreceptor belt and the sheet has an outboard registration edge; and

wherein determining at least one registration error involves at least one geometrical transformation, including

$$\alpha = \phi - \theta$$

where

α is target rotation;

ϕ is the amount of rotation of the raster output scanner about an axis perpendicular to the photoreceptor belt surface; and

θ is the amount of rotation of the sheet about the outboard registration edge of the sheet.

11. (Currently Amended) A method of setting up image-on-recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameter to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least one error to adjust at least one operational parameter of the image forming device; and. wherein the sheet has an outboard registration edge; and ~~The method of claim 1,~~

wherein determining at least one registration error in involves at least one geometrical transformation, including

$$\Delta h_\alpha = h_2 * (1 - \cos(\theta))$$

where:

θ is the amount of rotation of the sheet about the outboard registration edge of the sheet; and

h_2 is the distance from the trailing edge of second side of the sheet to the center of a trailing edge outboard crosshair located on the test pattern.

12. (Currently Amended) A method of setting up image-on-recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameter to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors to adjust at least one operational parameter of the image forming device;

~~The method of claim 1,~~ wherein the sheet has an outboard edge and an outboard edge pivot point; and

wherein determining at least one registration error in image to sheet position in the lateral direction involves at least one geometrical transformation which determines the distance from the pivot point of the outboard ~~shelf~~ sheet edge to a sheet leading edge target.

13. (Currently Amended) A method of setting up image-on-recording medium of an image forming device, comprising:

generating a test pattern;

printing the test pattern on an image recording medium sheet;

measuring at least one test pattern parameter;

using the at least one measured test pattern parameter to determine at least two registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction; and

using the determined at least two registration errors to adjust at least one operational parameter of the image forming device;

~~The method of claim 1,~~ wherein the test pattern comprises a LE target and the sheet has an outboard edge and an outboard edge pivot point; and

wherein determining at least one registration error in image to sheet position in the process direction involves at least one geometrical transformation which determines ~~the~~ an angular position of the LE target relative to the pivot point of the outboard edge of the sheet.

14. (Currently Amended) The method of claim 1, wherein the image forming device includes a raster output scanner (ROS), a pixel clock and/or a movable photoreceptor belt and drum, and a paper path; and

wherein adjusting the at least one operational parameter comprises simultaneously adjusting a pixel clock frequency and/or a photoreceptor belt or drum speed, adjusting the first pixel delay after the start of scan location, varying sheet position or timing in the paper path, adjusting angular position of the ROS relative the photoreceptor belt.

15. (Currently Amended) A control system usable to control a printing device, the printing device having a raster optical scanner, a photoreceptor belt or drum having a surface, ~~and~~ a fuser, a raster output scanner (ROS), a pixel clock, and a paper path; and

wherein comprising:

an input device;

an input/output interface;

a controller;

at least one memory;

a setup circuit or routine that generates a test pattern, the test pattern comprising a LE target and the sheet has an outboard edge and an outboard edge pivot point, the test pattern being printed on a recording medium sheet ~~of recording media~~, the setup circuit or routine using measured test pattern parameters obtained from the printed test pattern to determine registration errors in at least one of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral and process directions, and that uses the determined errors to simultaneously reduce at least two of the determined registration errors.

16. (Original) The control system of claim 15, further including:

a system to print the test pattern on a first side of the image recording medium and on the second side of the image recording medium;

a system to measure test pattern parameters on the first side image and the second side image; and

a system to correct said errors by adjustment of at least one of a pixel clock frequency and a photoreceptor speed based on the determined errors.

17. (Original) The control system of claim 15, wherein the test pattern comprises a plurality of crosshair targets.

18 (Original) The control system of claim 15, wherein a measured test pattern parameter is a sheet pivot point, a distance from a center of a leading edge crosshair located near the inboard leading edge of the sheet to a center of a trailing edge crosshair located near the outboard edge of the sheet, a distance from a center of a leading edge crosshair located near the outboard leading edge of the sheet to an outboard edge of the sheet, a distance between a center of a leading edge inboard crosshair to the center of a leading edge outboard crosshair, a distance between a center of a leading edge outboard crosshair to a center of a trailing edge outboard crosshair, a distance between a leading edge of the sheet to a center of a leading edge outboard crosshair, or a distance between a trailing edge of the sheet to the center of a trailing edge outboard crosshair.

19. (Currently Amended) The system of claim 15, wherein the test pattern has parameters and the sheet has an outboard registration edge; and

wherein the setup circuit or routine to determine registration errors in paper skew comprises a circuit or routine to measure the test pattern parameters of d_1, e_1, f_1, d_2, e_2 and f_2 and to perform at least one geometrical transformation, including

$$\theta = (\tan^{-1}[(f_1 - e_1) / d_1] + \tan^{-1}[(f_2 - e_2) / d_2]) / 2$$

where θ equals the amount of rotation of the sheet about the outboard registration edge of the sheet, d_1 is the distance between the two leading edge (LE) crosshair centers on the first side of the sheet, e_1 is the distance from the outboard (OB) edge of the sheet to the center of the leading edge (LE) outboard (OB) crosshair on the first side of the sheet, f_1 is the distance from the outboard (OB) edge of the sheet to the center of the trailing edge (TE) outboard (OB) crosshair on the first side of the sheet, d_2 is the distance between the two leading edge (LE) crosshair centers on the second side of the sheet, e_2 is the distance from the outboard (OB) edge of the sheet to the center of the leading edge (LE) outboard (OB) crosshair on the second side of the sheet, and f_2 is the distance from the outboard (OB) edge of the sheet to the center of the trailing edge (TE) outboard (OB) crosshair on the second side of the sheet.

20. (Original) The control system of claim 15, wherein determining at least one registration error in raster output scanner skew involves at least one geometrical transformation, including

$$\phi = (\phi_1 + \phi_2) / 2$$

where:

ϕ equals the amount of rotation of the raster output scanner about an axis perpendicular to the photoreceptor belt surface;

ϕ_1 is the amount of rotation of the raster output scanner about an axis perpendicular to the photoreceptor belt surface for first side of the sheet; and

ϕ_2 is the amount of rotation of the raster output scanner about an axis perpendicular to the photoreceptor belt surface for second side of the sheet.

21. (Original) The control system of claim 15, wherein determining at least one registration error in image skew involves at least one geometrical transformation, including

$$L_{ME} = (L_{ME1} + L_{ME2}) / 2$$

where:

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L_{ME} is lateral magnification error of the sheet;

L_{ME1} is lateral magnification error for first side of the sheet; and

L_{ME2} is lateral magnification error for second side of the sheet.

22. (Original) The control system of claim 15, wherein determining at least one registration error involves at least one geometrical transformation, including:

$$P_{ME} = (P_{ME1} + P_{ME2}) / 2$$

where:

P_{ME} is process magnification error;

P_{ME1} is process magnification error for first side of the sheet; and

P_{ME2} is process magnification error for second side of the sheet.

23. (Currently Amended) The control system of claim 15, wherein determining at least one registration error involves at least one geometrical transformation, including:

$$\alpha = \phi - \theta$$

where:

α is target rotation;

ϕ is the amount of rotation of the raster output scanner about an axis perpendicular to the photoreceptor belt surface; and

θ is the amount of rotation of the sheet about the outboard registration edge of the sheet.

~~The control system of claim 20, wherein determining at least one registration error involves at least one geometrical transformation, including:~~

~~$\Delta h_\alpha = h_2 * (1 - \cos(\theta))$,~~

~~where:~~

~~θ is the amount of rotation of the sheet about the outboard registration edge of the sheet; and~~

~~h_2 is the distance from the trailing edge of second side of the sheet to the center of a trailing edge outboard crosshair located on the test pattern.~~

24. (Currently Amended) The control system of claim 15, wherein determining at least one registration error in image to sheet position in the lateral direction involves at least one geometrical transformation which determines the distance from the pivot point of the outboard ~~shelf~~ sheet edge to a sheet leading edge target.

25. (Original) The control system of claim 15, wherein determining at least one registration error in image to sheet position in the process direction involves at least one geometrical transformation which determines ~~the~~ an angular position of the LE target relative to the pivot point of the outboard edge of the sheet.

26. (Currently Amended) The control system of claim 15 wherein adjusting at least one operational parameter includes correcting a pixel clock frequency and/or a photoreceptor belt or drum speed, adjusting ~~the~~ a first pixel delay after the start of scan location, adjusting sheet position or timing in the paper path, and adjusting angular position of the raster output scanner relative to the photoreceptor belt.

27. (Original) A method of determining and reducing image on sheet registration errors of a printing machine comprising:

providing a test pattern on a sheet;

making measurements of a plurality of registration errors based on the test pattern;

determining error corrections for the plurality of registration errors using an algorithm; and

providing the error corrections to at least one of a printing machine or printing machine operator to correct the plurality of registration errors.

28. (Original) The method of claim 27, wherein the plurality of registration errors include two or more of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction.

29. (Currently Amended) A system of determining and reducing image on sheet registration errors of a printing machine comprising:

a test pattern provider ~~to provide~~that provides a test pattern on a sheet;

a measurer ~~to making~~that makes measurements of a plurality of registration errors based on the test pattern;

an error corrector ~~to determine~~that determines error corrections for the plurality of registration errors using an algorithm; and

an error correction provider ~~to provide~~that provides error corrections to at least one of a printing machine or printing machine operator to correct the plurality of registration errors.

30. (Currently Amended)) The system of claim ~~27~~ 29, wherein the plurality of registration errors include two or more of image squareness, image skew, sheet skew, process magnification, lateral magnification, image to sheet position in the lateral direction and image to sheet position in the process direction.

31. (New) The control system of claim 20, wherein the sheet has an outboard registration edge, a leading edge and a trailing edge; and

wherein determining at least one registration error involves at least one geometrical transformation, including:

$$\Delta h_\alpha = h_2 * (1 - \cos(\theta)),$$

where:

θ is the amount of rotation of the sheet about the outboard registration edge of the sheet; and

h_2 is the distance from the trailing edge of second side of the sheet to the center of a trailing edge outboard crosshair located on the test pattern.

32. (New) A method of determining and reducing image on sheet registration errors of a printing machine comprising:

providing a test pattern on a sheet;

making measurements of a plurality of registration errors based on the test pattern;

determining error corrections for the plurality of registration errors using an algorithm; and

providing the error corrections to at least one of a printing machine or printing machine operator to correct the plurality of registration errors in a single step.

33. (New) A system of determining and reducing image on sheet registration errors of a printing machine comprising:

a test pattern provider to provide a test pattern on a sheet;

a measurer to making measurements of a plurality of registration errors based on the test pattern;

an error corrector to determine error corrections for the plurality of registration errors using an algorithm; and

an error correction provider to provide error corrections to at least one of a printing machine or printing machine operator to correct the plurality of registration errors in a single step.